Title: National Airspace Human Factors Integration Plan for Unmanned Air Vehicles: An Evaluation of Human Factors Research Issues

Description of Requirements:
to achieve the Federal Aviation Administration's (FAA) Flight Plan 2004-2008 Increased Safety Goal objective 2 to reduce the number of fatal accidents in general aviation, the General Aviation and Commercial Aviation Division (AFS-800) needs to develop policies, procedures, and approval processes to enable operation of unmanned aerial vehicles. To date, the vast amount of resources allocated to the development, testing, and integration of unmanned aerial vehicles in the national airspace have been invested in hardware solutions; however AFS-800 recognizes human factors is an integral component to safe unmanned aerial vehicle operations. AFS-800 requests a five-year human factors integration plan that identifies human factors issues mapped to the FAA's Regulation and Certification unmanned aerial vehicles plan. This research plan will provide supporting documentation for human factors issues that have been resolved, and recommendations for future human factors research.

Background:
Unmanned aerial vehicles are quickly becoming a part of the national airspace system as they transition from primarily military and hobbyist applications to mainstream flight applications such as surveillance, and advertising, cargo hauling, crop dusting, and other areas. To prepare the FAA for handling the integration of these aircraft into the NAS, research, previous guidance, and other non-research info, is required to look at important requirements for operator qualifications, training the operators of these aircraft, maintaining aircraft and ground control stations, identify important human factors hardware and software issues associated with these aircraft and ground control stations, as well as consider air traffic control requirements.Numerous government and non-government international organizations have formed unmanned aerial vehicle groups, such as Federal Aviation Administration, NASA's Access 5, Department of Defense, International Civil Aviation Organization, and Civil Aviation Safety Authority Australia, to recommend policies, procedures, and approval process that will allow safe and reliable operation of unmanned aerial vehicles in the national airspace system. Members of these groups acknowledge that the operator is the critical component in the system; however the vast amount of resources have been spent on airworthiness issues, with little emphasis on human factors issues. In order for the FAA to achieve the Flight Plan 2004-2008 Increased Safety Goal objective 2, human factors issues must be addressed before the FAA embarks on rulemaking.

Output:
A national airspace human factors integration five-year plan for unmanned aerial vehicle report. This report will identify all aircraft, ground station, and air traffic human factors issues that pertain to unmanned aerial vehicles. For each human factors issue, the report will define each issue: (1) how it relates to unmanned

aerial vehicles, (2) what research has been completed, (3) what Department of Defense UAV guidance can be used, (4) what UAV guidance from other nations can be used, (5) what research is needed, (6) when and how will this issue be addressed by Access 5, FAA, Department of Defense, or other organizations, and (7) what priority should the FAA give to each issue. The report will also include a matrix and Gantt chart. The matrix will illustrate all the human factors issues completed and need to be addressed by each of the unmanned aerial vehicle groups. The Gantt chart will link AVR's unmanned aerial vehicle integration plan to human factors research that has been completed and need to be completed over the next five years.

Regulatory Link:
Part 43, 61, 63, 65, 91, 93, 147; Federal Aviation Administration's Flight Plan 2004-2008